

センターファイル  
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# TOSHIBA

STEREO RADIO CASSETTE RECORDER

## RT-103S(L-O2)



### SPECIFICATIONS

|                         |   |                         |   |
|-------------------------|---|-------------------------|---|
| Cassette tape used:     | C-30, C-60, C-90, C-120   | Speakers:               | 120 mm (dia.) dynamic x 2                 |
| Tape speed:             | 4.8 cm/sec.   | Jacks:                  | [MIC] jack x 2, Impedance<br>200 - 2K ohm |
| Track system:           | Four-track, two-channel<br>stereophonic   |                         | [AUX] jack x 2, Impedance<br>50K ohm      |
| Recording system:       | AC bias (50 kHz)  |                         | [PHONES] jack headphone                   |
| Erasing system:         | Multipolar magnet erasing   | Power supply:           | AC 110V-127V/220V-240V,<br>50/60 Hz       |
| Frequency response:     | Normal 60 Hz to 10 kHz  |                         | DC 9V (SUM-1 "D" size x 6)                |
| Receiving frequency:    | FM: 88 - 108 MHz<br>SW2: 7.5 - 22 MHz<br>SW1: 2.3 - 7.5 MHz<br>MW: 525 - 1605 kHz | Power consumption:      | 13W                                       |
| Intermediate frequency: | FM: 10.7 MHz<br>MW, SW1, SW2: 455 kHz   | Dimensions (W x H x D): | 400 x 235 x 127 mm                        |
| Antenna:                | FM, SW1, SW2: telescopic<br>antenna<br>MW: ferrite-core antenna                   | Weight:                 | 2.9 kg (without batteries)                |

Specifications are subject to change without notice.

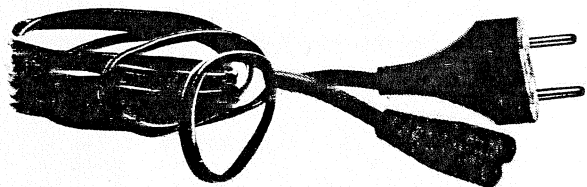
VF

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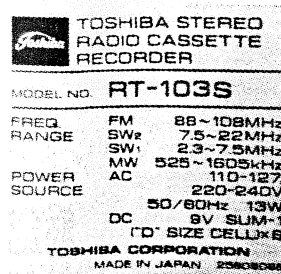
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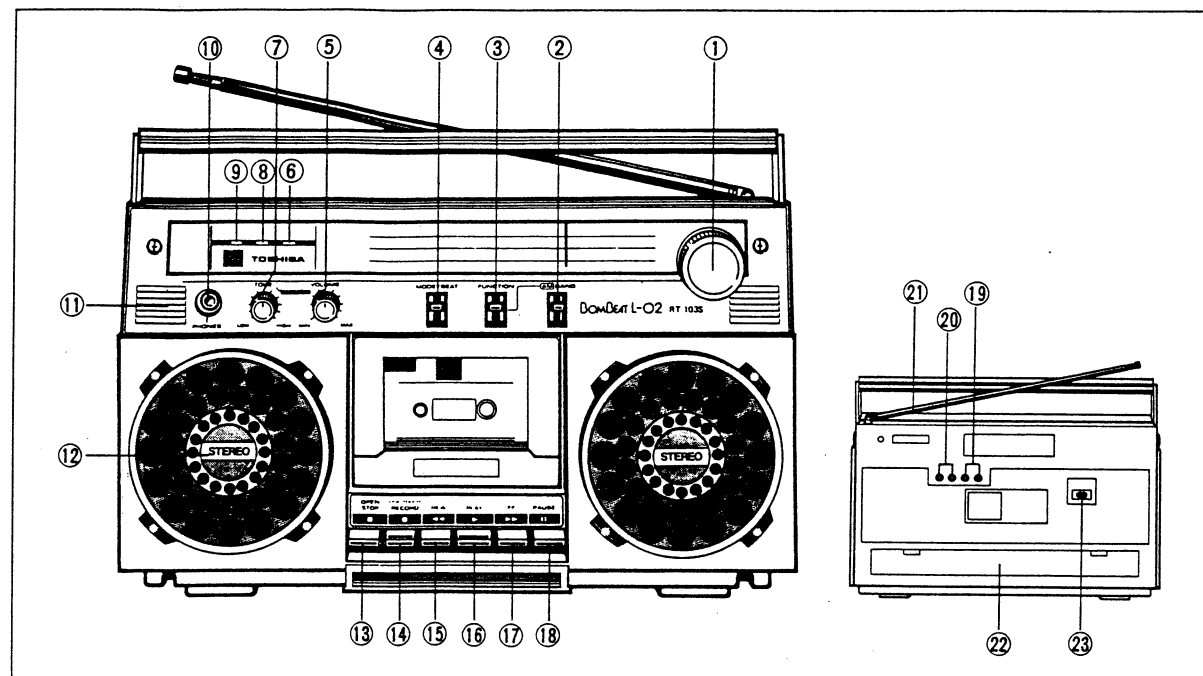
Power Supply Cord



Nameplate



## CONTROL FUNCTIONS



- ① **Tuning Knob**
- ② **[AM] BAND Selector**  
For selecting MW, SW<sub>1</sub>, and SW<sub>2</sub> bands.
- ③ **[FUNCTION] Selector**  
Select the required program source by switching to the corresponding position.  
FM: For listening to radio broadcast of FM.  
AM: For listening to radio broadcast of AM.  
RADIO OFF/TAPE: For tape playback, and recording via the built-in microphone, and external microphones.
- ④ **[MODE] Selector**  
Switch to the STEREO position for stereo listening, or to the MONO position for monaural listening. In the STEREO WIDE position, an even greater stereo effect is obtained.
- ⑤ **[VOLUME] Control**  
Turn to adjust the volume level when listening on the speakers or headphones. In the low volume region marked LOUDNESS (thick line), the treble and bass tones are amplified to give a more natural sound at low listening levels.
- ⑥ **[TUNING] Indicator**  
This indicator lights when a broadcasting station is tuned.
- ⑦ **[TONE] Control**  
Turn this knob clockwise to emphasize the tone.
- ⑧ **[FM STEREO] Indicator**  
This indicator lights when an FM stereo broadcast is received (even when the MODE selector is in the MONO position.)
- ⑨ **[BATTERY] Indicator**  
This indicator lights while the set is turned on as long as there is sufficient power in the batteries. (When AC mains power is used, the lamp stays on.)
- ⑩ **[PHONES] Jack**  
To listen via a pair of headphones, connect to this jack. (Inserting the headphone plug automatically switches off the speakers.)
- ⑪ **Built-in Microphones**
- ⑫ **Speaker**
- ⑬ **[STOP/OPEN] Key**  
To stop the tape, press this key once. To open the cassette compartment, press a second time.
- ⑭ **[ONE TOUCH RECORD] Key**  
When this key is pressed, thereby starting recording.
- ⑮ **[REW] Key**  
For rapid rewinding of the tape.
- ⑯ **[PLAY] Key**  
Press this key to play recorded tapes.
- ⑰ **[FF] Key**  
For rapid forward winding of the tape.
- ⑱ **[PAUSE] Key**  
Press to stop the tape temporarily during recording or playback. Press a second time to resume the recording or playback.
- ⑲ **[MIC] Jacks**  
Microphones with 3.5 mm plugs (outside diameter) may be connected to these jacks.
- ⑳ **[AUX] Jacks**  
To record via an external stereo amplifier, connect a cord with phonoplugs (optional) to these jacks.
- ㉑ **Telescopic Antenna**  
Adjust the direction and length of this antenna to obtain the optimum sound when listening to FM, SW<sub>1</sub>, and SW<sub>2</sub> radio broadcasts.
- ㉒ **Batteries Compartment**
- ㉓ **[AC POWER] Socket**

## OPERATION

## 1 Listening to the Radio

- 1 Set the [FUNCTION] selector ③ to either the FM or AM position as desired.
  - 2 Turn the [TUNING] knob ① to tune in the desired radio station. For FM stations, adjust the antenna ② direction and length to obtain best reception. For short-wave stations, leave the antenna in the vertical position.
  - 3 Adjust to suitable volume level by turning the [VOLUME] control ⑤.
  - 4 Adjust the tone by turning the [TONE] control ⑦.
- When the [FUNCTION] selector ③ is set to the AM position, set the [AM] BAND selector ② to the desired band, i.e. SW<sub>1</sub>, SW<sub>2</sub> or MW.

## 2 Listening to Tapes

- 1 Press the [STOP/OPEN] key ⑬ to open the cassette compartment, and insert a recorded tape.
- 2 Set the [FUNCTION] selector ③ to the TAPE position.
- 3 Press the [PLAY] key ⑯ to start the tape.
- 4 Adjust the [VOLUME] ⑤ and [TONE] ⑦ controls.

## 3 Recording Radio Broadcasts

- 1 Tune to the desired station as described above under "Listening to the Radio".
- 2 Press the [STOP/OPEN] key ⑬, and insert a blank tape.
- 3 Press the [ONE TOUCH RECORD] key ⑭ to start recording.

Since the RT-103S has been designed with an automatic recording level adjustment circuit (ALC), a suitable recording level will be set automatically without any further operations.

Furthermore, this set also features a "variable monitor system" permitting the listener to change the listening volume without effecting the recording level.

## 4 Recording via Built-in Microphones

- 1 Press the [STOP/OPEN] key ⑬ and insert a blank tape.
- 2 Set the [FUNCTION] selector ③ to the TAPE position.
- 3 Press the [ONE TOUCH RECORD] key ⑭ to start recording.

## 2. DISASSEMBLY INSTRUCTIONS

## 5 Recording with External Microphones

Plug external microphones (optional) into the MIC jacks in the rear of the set, and then proceed in exactly the same way as described above for "Recording via Built-in Microphones."

## 6 Recording from other Audio Equipment

An external amplifier can be connected to the [AUX] jacks ⑩ in the rear of the set. To record, switch the [FUNCTION] selector ③ to the TAPE position, and then proceed in exactly the same way as described above for "Recording via Built-in Microphones."

## Auto Shut-Off (ASO) Mechanism

When the end of the tape is reached during recording and playback, depressed buttons are automatically released and the tape is automatically stop.

**Note:** When a radio program is being recorded, however, power to the radio section will not be switched off until the [FUNCTION] selector ③ is set to the "RADIO OFF/TAPE" position. Also note that the ASO mechanism does not operate in fast forward or rewind modes. In the cases, the [STOP/OPEN] key ⑬ must be pressed to stop the tape and release the depressed key.

## TIMER RECORDINGS

■ By connecting the RT-103S to an audio timer (Optional), radio programs can be recorded at any desired preset time.

1. Tune to the desired radio station as described earlier under "Listening to the Radio".
2. Insert a blank cassette tape in the compartment.
3. Set the audio timer to the desired recording start time, and then connect the RT-103S power cord to the timer.
4. Press the [●ONE TOUCH RECORD] key ⑭.
5. At the preset time, the RT-103S power will be switched on, and recording will start completely automatically.

**Note:** 1. The timer recording will not start at the preset time if the [II PAUSE] key ⑮ has been left set.

**Note:** 2. When the end of the tape is reached at the end of the recording, the ASO mechanism will stop the tape and release the keys, but the radio power will remain on. In order to have the RT-103S power supply completely switched off after a recording, an audio timer that has been designed to switch the power off again at the end of a recording must be used.

## FRONT PANEL REMOVAL

1. Remove 6 Knobs (Tuning, AM Band, Function, Mode, Volume and Tone).
2. Press the open key.
3. Remove 5 screws (B) and (C).
4. Separate the front cabinet from the back cabinet.

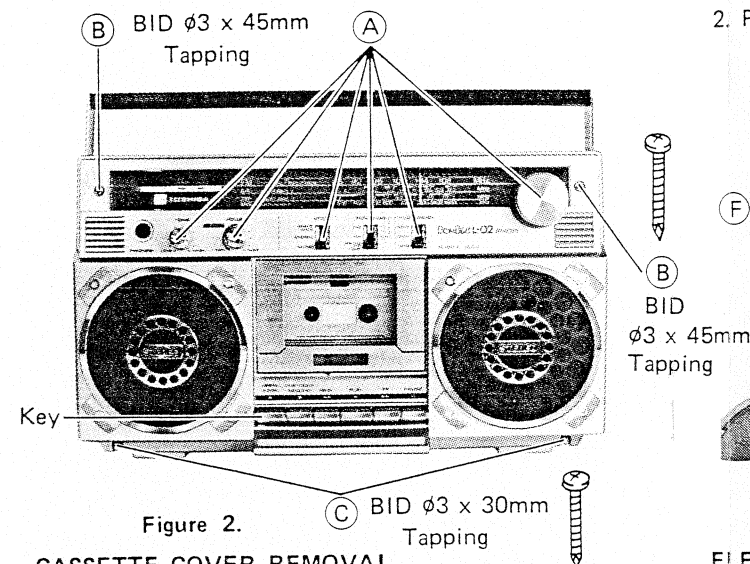


Figure 2.

## CASSETTE COVER REMOVAL

Detach the cassette cover with retaining board of both sides of cassette cover pushing simultaneously in the direction marked arrow and pulling it upward.

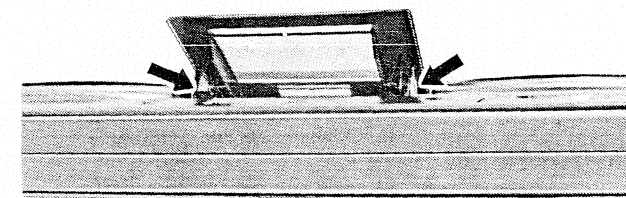


Figure 4.

## FRAME AND DIAL DRUM REMOVAL

1. Remove a screw securing the dial drum.
2. Frame can be removed by inserting dial drum into the frame as illustrated without disconnecting dial cord. (See figure 6 and 7.)

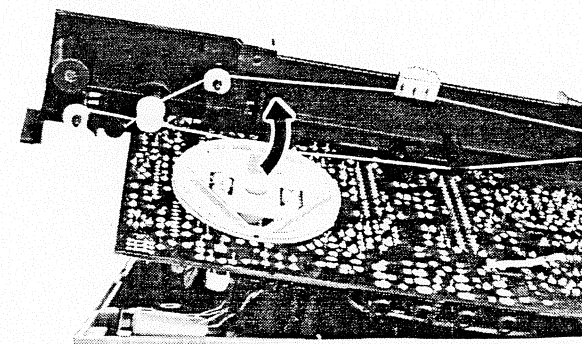


Figure 6.

## MECHANISM ASS'Y REMOVAL

1. Remove 2 screws (D).
2. Remove 2 connections (E).
3. Separate the mechanism ass'y from the back cabinet.

## P.C. BOARD REMOVAL

1. Remove 3 screws (F).
2. Pull out the P.C. Board from the back cabinet.

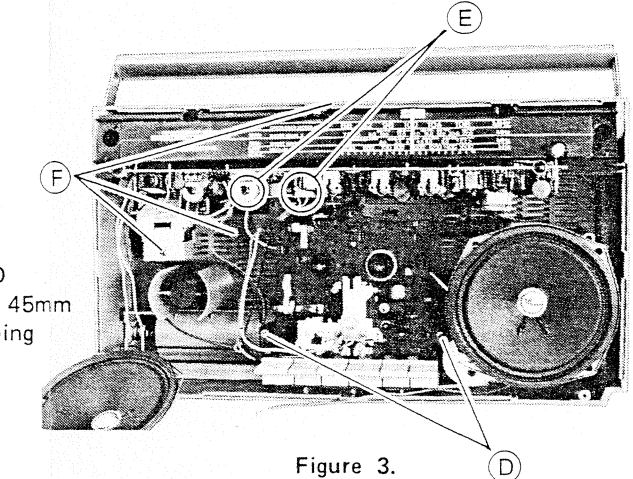


Figure 3.

## ELECTRICAL INSPECTION

For easy inspection, insert the end of Jack into the opening of prop of cabinet back as illustrated in fig. (G) after removing P.C. Board.

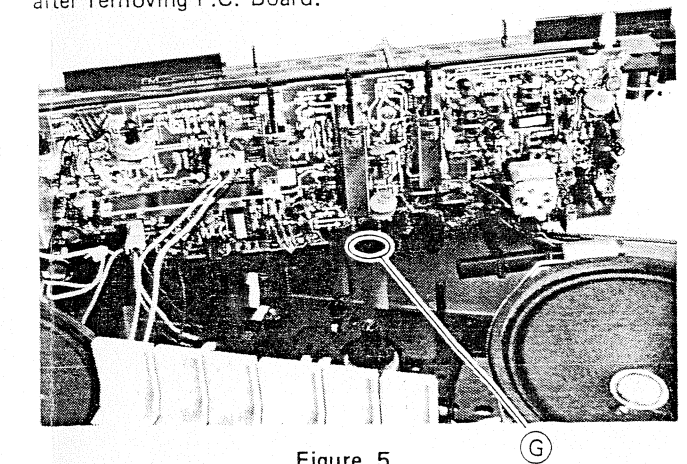


Figure 5.

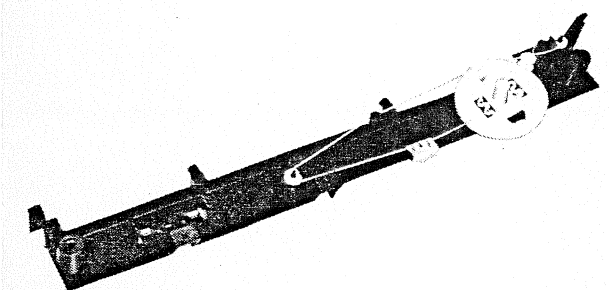


Figure 7.

### 3. HANDLE REMOVAL

When replacing the handle, remove it by cutting the handle washer shown in figure below with cutter etc.

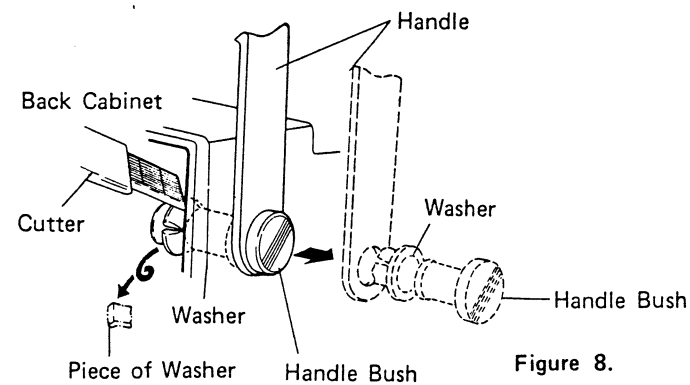


Figure 8.

### 4. METHOD OF P.R.C. REPAIRING

Cut defective printed-resistor-circuit off with knife. See Figure 9. Solder the replacement resistor (See replacement resistor parts list) on the opposite side of printed-circuit-board. See Figure 10.

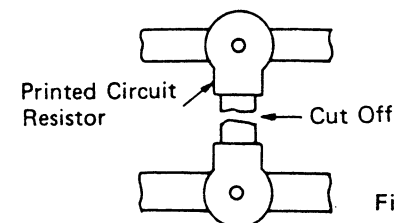


Figure 9.

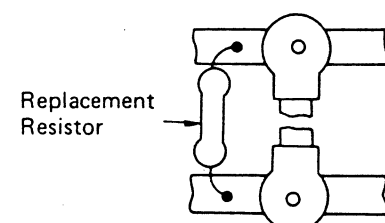


Figure 10.

### 5. DIAL CORD RESTRINGING

1. Set the drum on the variable capacitor with a screw.
2. Wind the dial cord in numerical order.
3. Keeping the dial cord pulled at the position (6), wind it on the dial drum at (7).
4. Hook the spring on the dial drum as in figure.
5. Adjust the pointer to "0" with tuning shaft turning extremely counterclockwise.

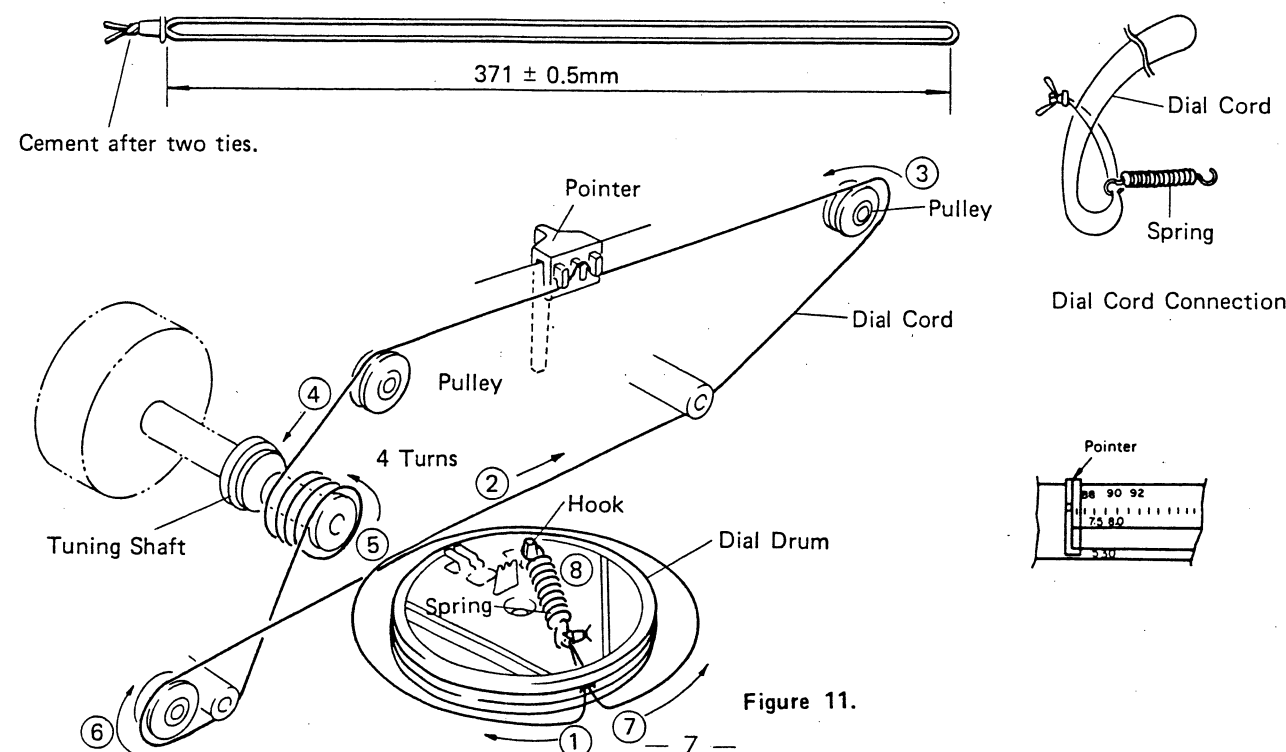


Figure 11.

### 6. BLOCK DIAGRAM

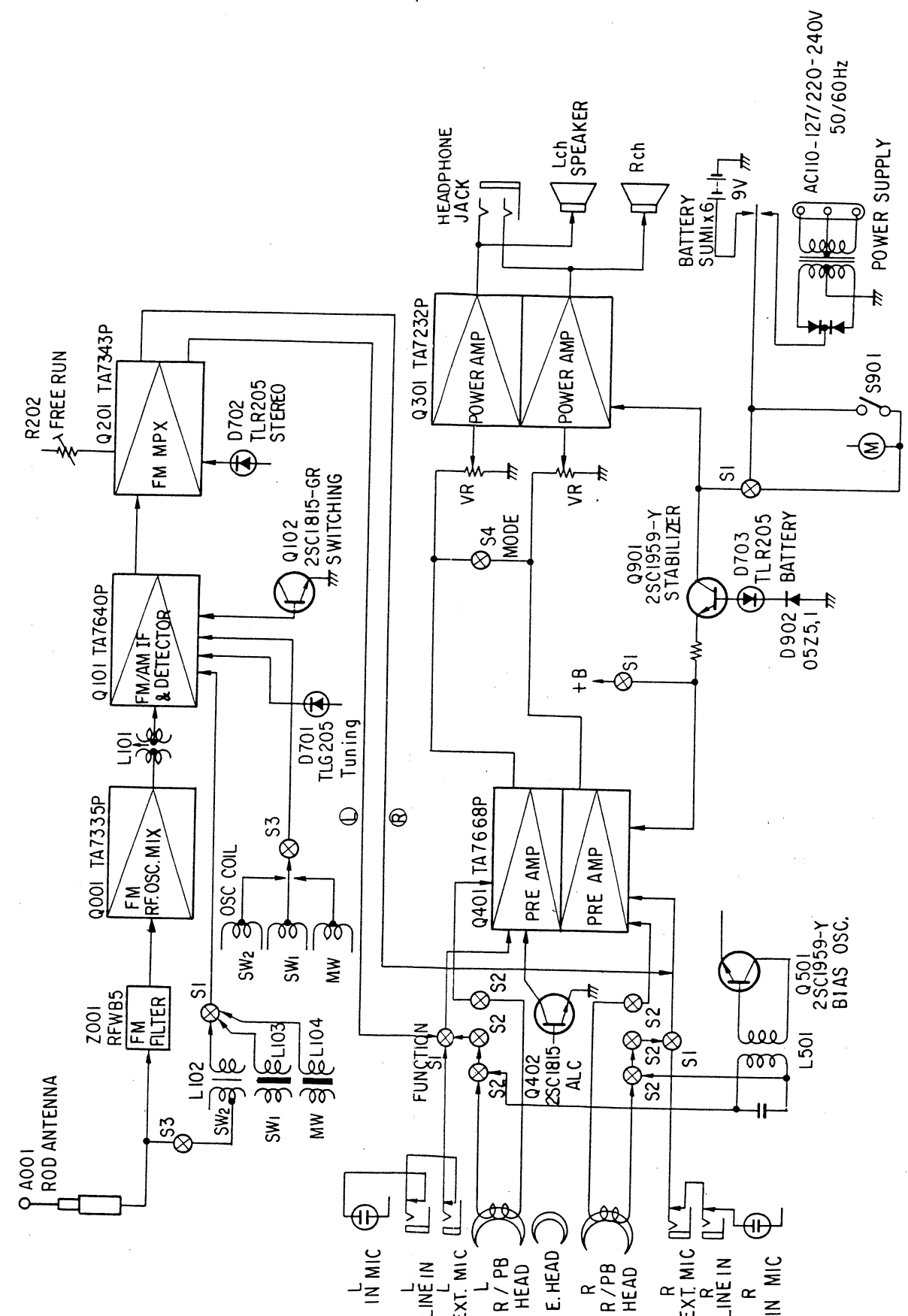


Figure 12.

## 7. ALIGNMENT INSTRUCTIONS

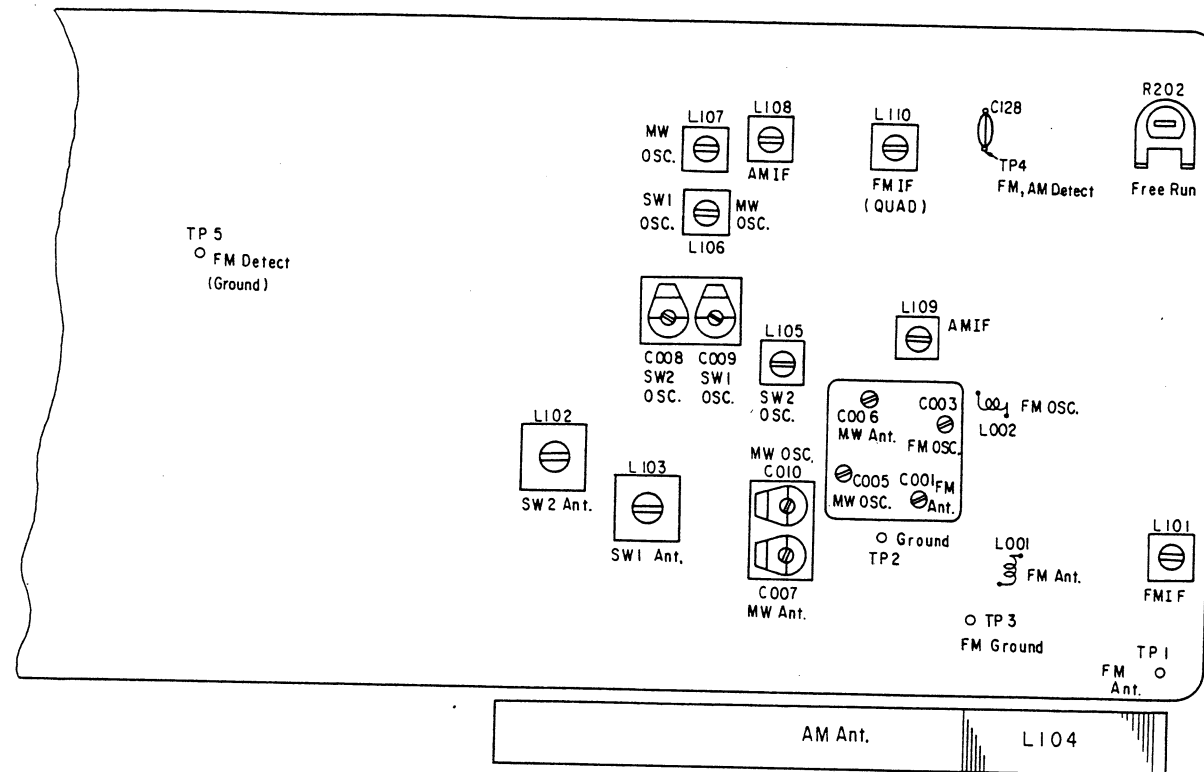


Figure 13.

## TEST EQUIPMENT

1. Signal generator with a frequency range of at least from 455 kHz to 23 MHz AM.
2. Oscilloscope with a wide range amplifier of approximately 100 kHz.
3. Test loop — a coil of any size wire, one turn or more. (MW)
4. A 30 ohm dummy antenna. (SW1, SW2)
5. VTVM

## AM ALIGNMENT

1. Turn on the AM signal generator and the VTVM allowing a fifteen-minute warm-up period.
2. Using the test loop across the output of the signal generator, inductively connect the signal generator to the radio.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set signal generator frequency as listed in ALIGNMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
5. Set volume control at mid-position.
6. Proceed as outlined in the IF-MW and SW ALIGNMENT CHART.

## MW ALIGNMENT CHART

| Band | Step | Signal Generator Frequency        | Radio Dial Setting                                     | Adjustment          | Remarks                        |
|------|------|-----------------------------------|--|---------------------|--------------------------------|
| IF   | 1    | 455 kHz                           | Tuning Gang Fully Counter-clockwise (Lowest Frequency) | L108, L109          | Adjust for maximum indication. |
| MW   | 2    | 510 kHz                           | Tuning Gang Fully Counter-clockwise (Lowest Frequency) | OSC. Coil L107 (MW) | Adjust for maximum indication. |
|      | 3    | 1650 kHz                          | Tuning Gang Fully clockwise (Highest Frequency)        | OSC. Trim C010      | Adjust for maximum indication. |
|      | 4    | Repeat steps 2 and 3 as required. |  |                     |                                |
|      | 5    | 600 kHz                           | Tune to Signal.  | Ant. Coil L104 (MW) | Adjust for maximum indication. |
|      | 6    | 1400 kHz                          | Tune to Signal.  | Ant. Trim. C007     | Adjust for maximum indication. |
|      | 7    | Repeat steps 5 and 6 as required. |  |                     |                                |

## SW ALIGNMENT CHART

| Band | Step | Signal Generator Frequency        | Radio Dial Setting                                     | Adjustment            | Remarks                        |
|------|------|-----------------------------------|--|-----------------------|--------------------------------|
| SW1  | 1    | 2.25 MHz                          | Tuning Gang Fully Counter-clockwise (Lowest Frequency) | OSC. Coil L106 (SW1)  | Adjust for maximum indication. |
|      | 2    | 7.7 MHz                           | Tuning Gang Fully Clockwise (Highest Frequency)        | OSC. Trim. C009       | Adjust for maximum indication. |
|      | 3    | Repeat steps 1 and 2 as required. |  |                       |                                |
|      | 4    | 3 MHz                             | Tune to Signal.  | Ant. Coil L103 (SW1)  | Adjust for maximum indication. |
|      | 5    | 7 MHz                             | Tune to Signal.  | Ant. Trim. C006       | Adjust for maximum indication. |
|      | 6    | Repeat steps 5 and 6 as required. |  |                       |                                |
| SW2  | 1    | 7.35 MHz                          | Tuning Gang Fully Counter-clockwise (Lowest Frequency) | OSC. Coil L105 (SW2)  | Adjust for maximum indication. |
|      | 2    | 22.5 MHz                          | Tuning Gang Fully Clockwise (Highest Frequency)        | OSC. Trim. C008       | Adjust for maximum indication. |
|      | 3    | Repeat steps 1 and 2 as required. |  |                       |                                |
|      | 4    | 9 MHz                             | Tune to Signal.  | Ant. Trim. L102 (SW2) | Adjust for maximum indication. |
|      | 5    | 20 MHz                            | No Adjustment  | Ant. Trim. C005       | Adjust for maximum indication. |
|      | 6    | Repeat steps 5 and 6 as required. |  |                       |                                |

## FM-IF ALIGNMENT

1. Set the select switch to FM position.
2. Turn on both sweep generator and oscilloscope, and allow a fifteen-minute warm-up period.
3. Connect the RF SWEEP SIGNAL OUTPUT from the signal generator through the loop antenna to the receiver.
4. Connect the oscilloscope vertical input directly to the test point TUN OUT H and connect the shielded lead to the test point E or chassis ground.
5. Connect the SWEEP VOLTAGE OUTPUT of the sweep generator to the oscilloscope.
6. Proceed as outlined in the FM-IF ALIGNMENT CHART.

## FM-IF ALIGNMENT CHART

| Step | Signal coupling   | Equip.   | Tuning   | Connection   | Adjust. point | Pattern   |
|------|---|--|--|--|---------------|---|
| 1    | Connect sweep generator output to a three-turn loop antenna of 10cm diameter. | Sweep generator of 10.7 MHz center freq. with 10.7 MHz marker. | Tuning Knob fully counterclockwise (Lowest Frequency.) | Set scope for connecting output signal from TUN OUT to vertical axis of scope "V" and sweep generator output to horizontal axis "H". | L101<br>L110  | Turn the coil L110 fully counterclockwise to obtain a single peak. Adjust coil L101 in order until the best single peak is obtained. Figure 15. Finally turn the coil L110 to obtain S curve. See figures 16. |

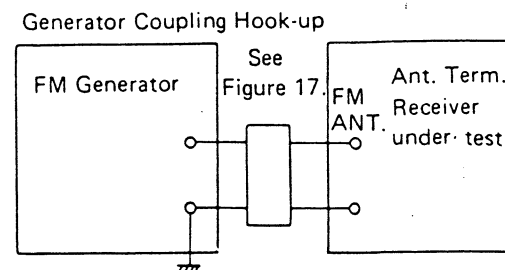
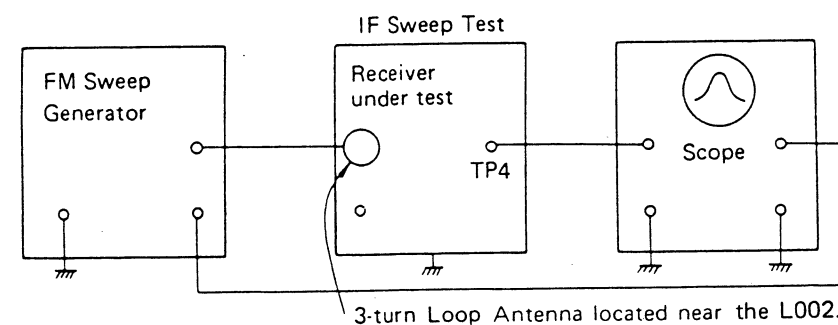


Figure 14.

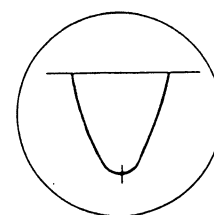


Figure 15.

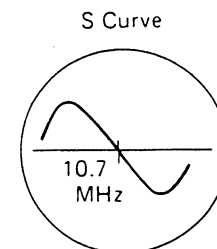


Figure 16.

## FM-RF ALIGNMENT

1. Turn on the signal generator and the VTVM, and allow a fifteen-minute warm-up period.
2. Connect the signal generator output through a 75 ohm dummy antenna across FM ANT.
3. Connect the VTVM across the voice coil or a 3.2 ohm dummy load.
4. Set the volume control to mid-position.
5. Adjust the signal generator frequency as indicated in FM-RF ALIGNMENT CHART, and maintain a sufficient signal output level to provide a measurable indication.
6. Proceed as outlined in the FM-RF ALIGNMENT CHART.

## FM-RF ALIGNMENT CHART

| Step | Signal Generator                  | Radio Dial Setting                                    | Adjustment      | Remarks                              |
|------|-----------------------------------|---|-----------------|--------------------------------------|
| 1    | 87.2 MHz                          | Tuning Knob fully Counterclockwise (Lowest Frequency) | OSC. Coil L002  | Adjust for maximum output indication |
| 2    | 109MHz                            | Tuning Knob fully Clockwise (Highest Frequency)       | OSC. Trim. C004 | Adjust for maximum output indication |
| 3    | Repeat steps 1 and 2 as required. |   |                 |                                      |
| 4    | 90MHz                             | Tune to signal  | Ant. Coil L001  | Adjust for maximum output indication |
| 5    | 106MHz                            |   | Ant. Trim. C001 |                                      |
| 6    | Repeat steps 4 and 5 as required. |   |                 |                                      |

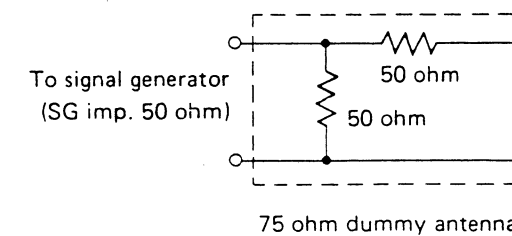


Figure 17.

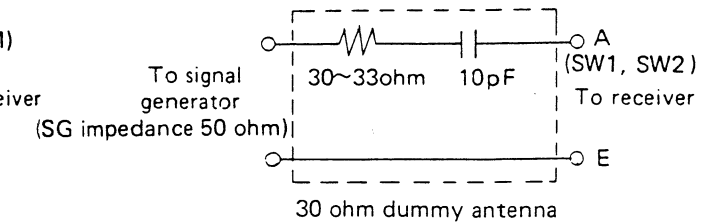


Figure 18.

## FREE RUN FREQUENCY ALIGNMENT

Adjust R202 under no signal condition so as to obtain 76 kHz  $\pm 150$  Hz.

## RECORD/PLAYBACK HEAD ADJUSTMENT

A 6.3 kHz standard tape must be used for this adjustment. Connect a VTVM or an oscilloscope to the EXT Speaker jack and adjust the left azimuth and the right one by using a phillips screwdriver to maintain the maximum output voltage.

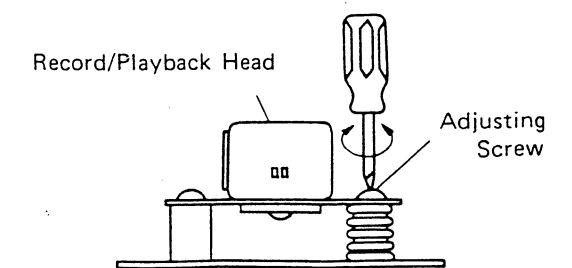


Figure 19.

## TAKE-UP/SUPPLY REEL TENSION

1. Insert cassette torque meter (HARTAK X-87 Torquette).
2. Press PLAY button and read torque meter. Torque should be 35 to 65 gcm.
3. Release PLAY button and press REWIND button. Torque should be 60 to 160 gcm. If necessary, clean take-up reel or drive belt with alcohol, or replace belt.

## 8. ELECTRICAL PARTS LOCATIONS

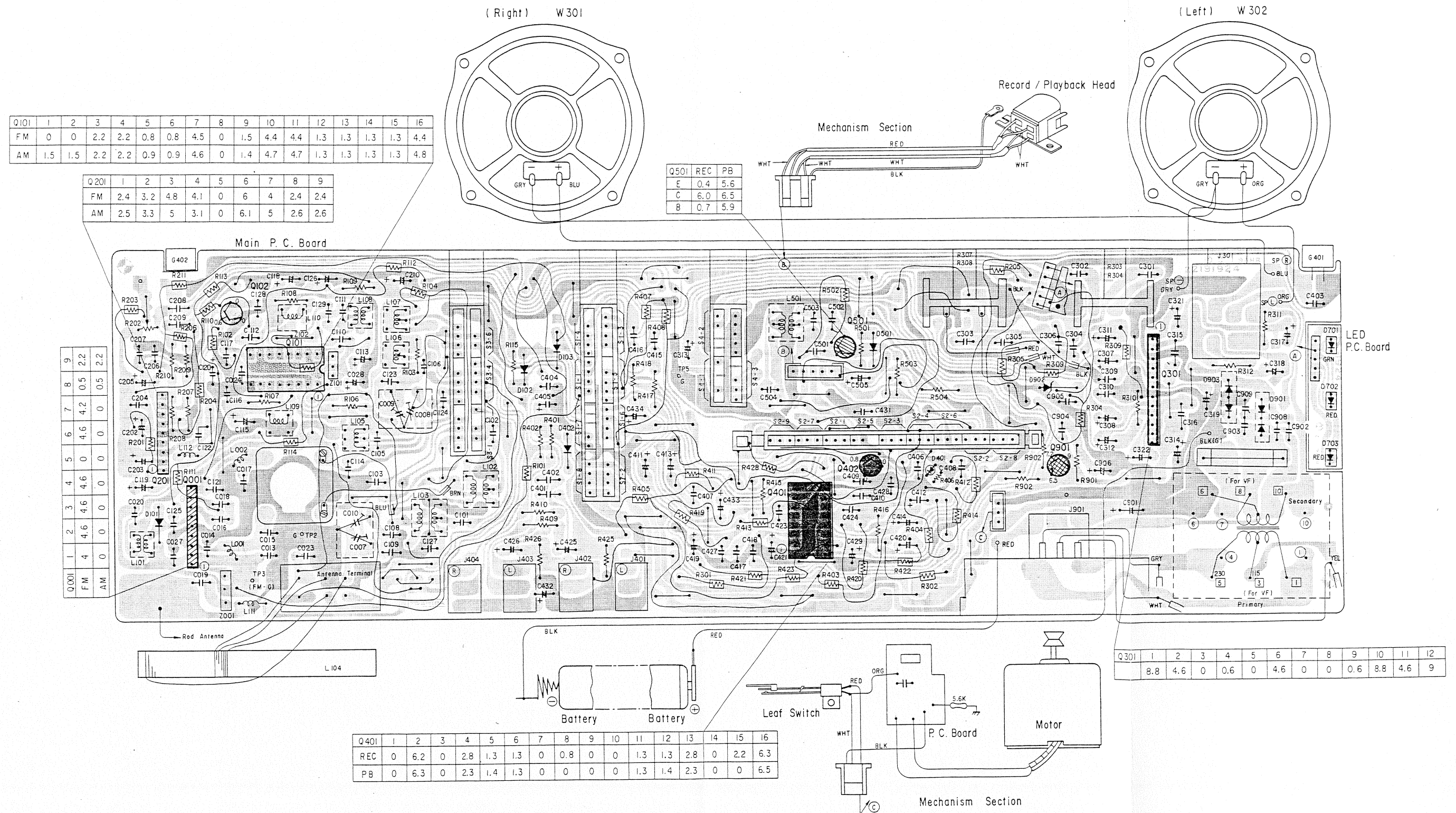


Figure 20.

The diagram illustrates a complex electronic circuit for a radio receiver. Key components include:

- Transistors:** Q001 (TA7335P FM RF Amp), Q101 (TA7640P), Q102 (2SC1815-GR Switching), Q401 (TA7668P Pre-amp), Q501 (2SC1959-Y Bias Osc), Q901 (2SC1659-Y Ripple Filter).
- Capacitors:** C001, C002, C003, C004, C005, C006, C007, C008, C009, C010, C011, C012, C013, C014, C015, C016, C017, C018, C019, C020, C021, C022, C023, C024, C025, C026, C027, C028, C029, C030, C031, C032, C033, C034, C035, C036, C037, C038, C039, C040, C041, C042, C043, C044, C045, C046, C047, C048, C049, C050, C051, C052, C053, C054, C055, C056, C057, C058, C059, C060, C061, C062, C063, C064, C065, C066, C067, C068, C069, C070, C071, C072, C073, C074, C075, C076, C077, C078, C079, C080, C081, C082, C083, C084, C085, C086, C087, C088, C089, C090, C091, C092, C093, C094, C095, C096, C097, C098, C099, C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150, C151, C152, C153, C154, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C215, C216, C217, C218, C219, C220, C221, C222, C223, C224, C225, C226, C227, C228, C229, C230, C231, C232, C233, C234, C235, C236, C237, C238, C239, C240, C241, C242, C243, C244, C245, C246, C247, C248, C249, C250, C251, C252, C253, C254, C255, C256, C257, C258, C259, C260, C261, C262, C263, C264, C265, C266, C267, C268, C269, C270, C271, C272, C273, C274, C275, C276, C277, C278, C279, C280, C281, C282, C283, C284, C285, C286, C287, C288, C289, C290, C291, C292, C293, C294, C295, C296, C297, C298, C299, C300, C301, C302, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C760, C761, C762, C763, C764, C765, C766, C767, C76

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## 10-1. MECHANISM EXPLODED VIEW (UPPER)

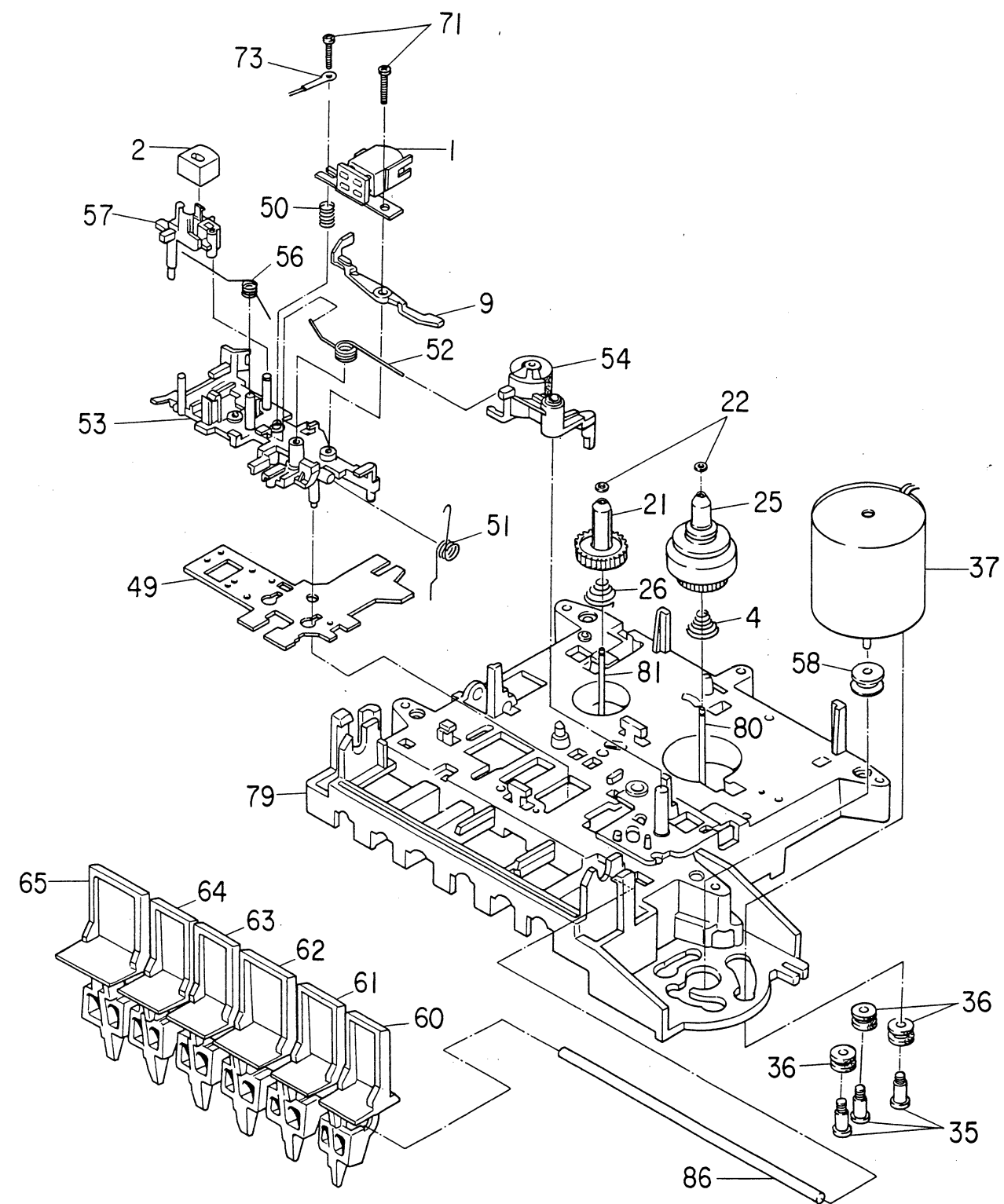


Figure 22.

- 15 -

NOTE: Excluded parts in the  
Parts List are not available  
as replacement parts.

## 10-2. MECHANISM EXPLODED VIEW (LOWER)

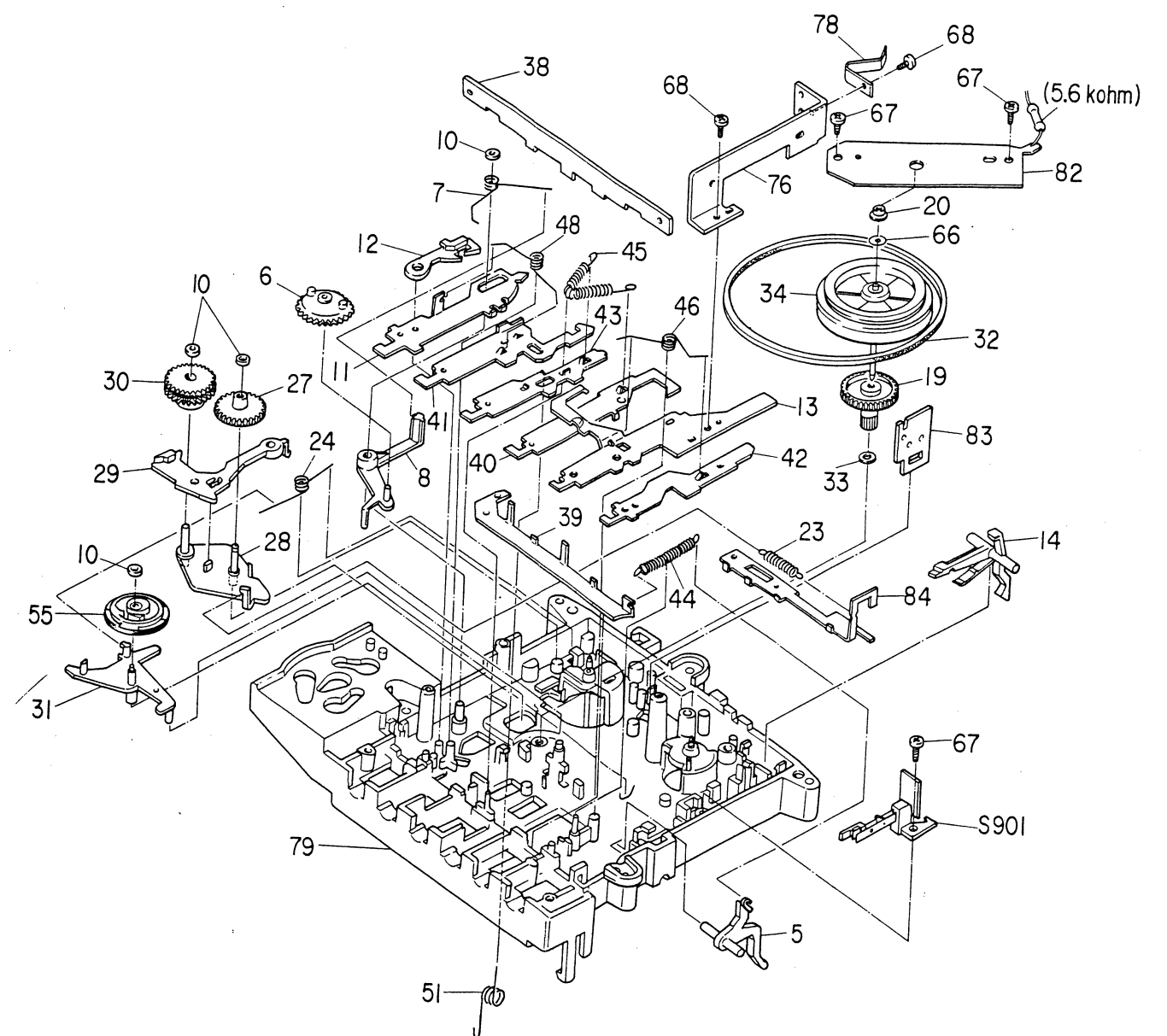


Figure 23.

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NOTE: Excluded parts in the  
Parts List are not available  
as replacement parts.

## 11. MECHANISM DISASSEMBLY AND SET UP

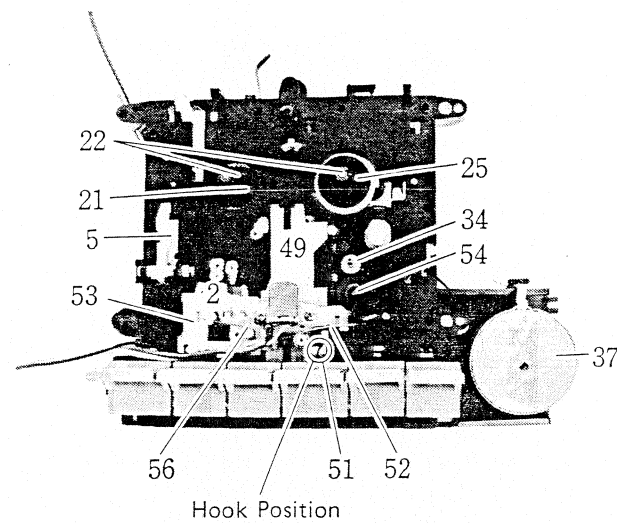


Figure 24.

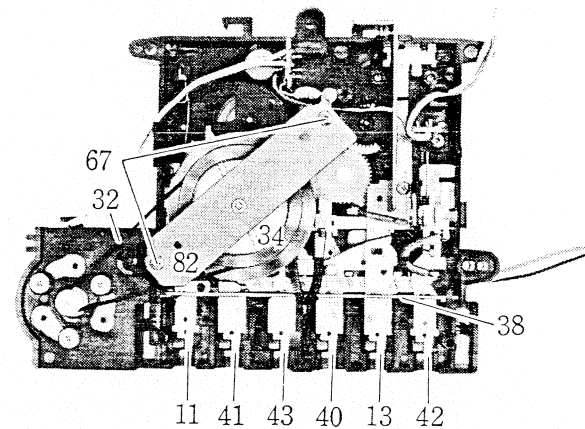


Figure 25.

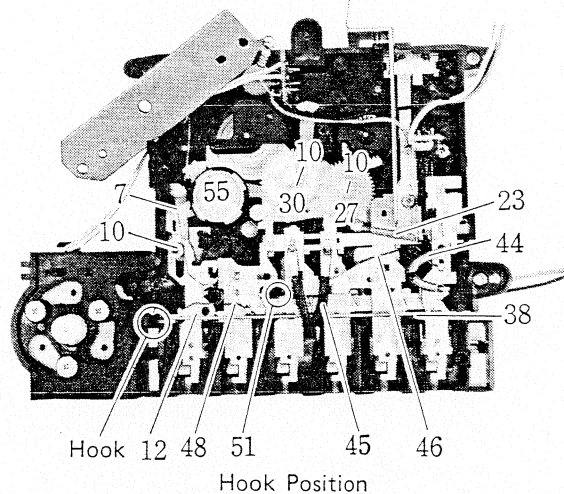


Figure 26.

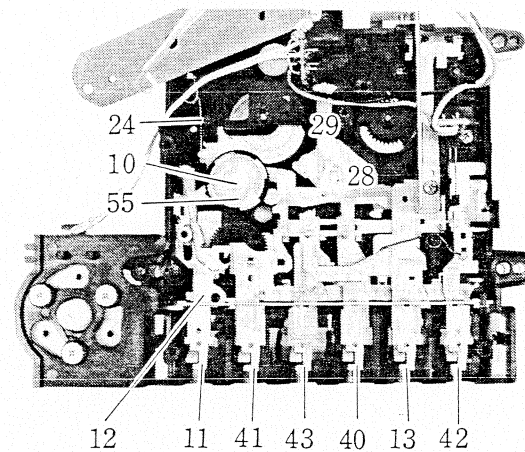


Figure 27.

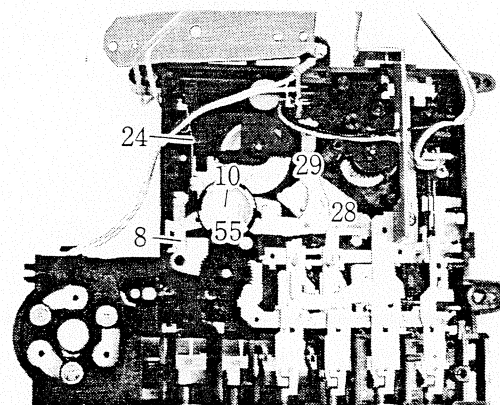


Figure 28.

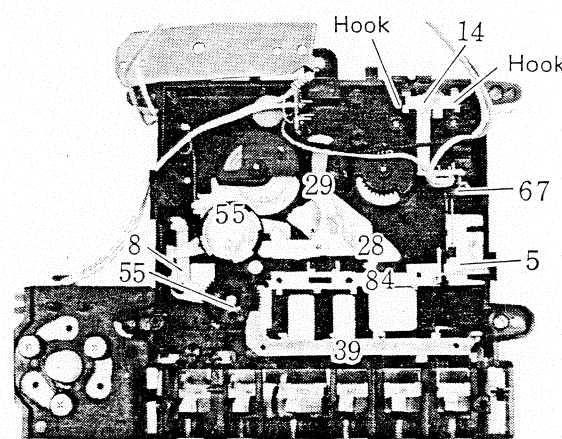


Figure 29.

1. First remove upper part, then remove lower part. To assemble, set up upper part then set up lower part. If setting up in wrong order, it results in failure.

## 1. Disassembly

1. Remove 51 and 52. Pull 49 toward you. Set the section of 49 to projection of chassis, then pull them upward to detach 49 and 54 at the same time. (Fig. 24)
2. Remove two 67 and 82. Remove 32, 20, 66, 34, 19 and 33 in order. (Fig. 25)
3. Remove 23, 44, 45, 46 and 48. Remove 10 and 7. Remove 38 after removing hook as illustrated.
4. Remove the washer 10 securing 27 and 30, then remove 27 and 30. (Fig. 26)
5. Remove 12, 11, 13, 41, 43, 40 and 42 in order. (Fig. 27)
6. Remove 24, 29 and 28. Remove 55 after removing 10 securing 55. (Fig. 28)
7. Remove 67 to detach the leaf switch. Remove 2 hooks to detach 14.
8. Motor can be detached by turning screw fully clockwise without removing it. (Fig. 29)
9. Remove 5, 39 and 84.
10. Remove the shaft of push button by detaching hooks at both ends.

## 2. Set up

1. Mount the push button.
2. Set up 1, 2, 9, 50, 51, 52 and 56. Mount 49 to the chassis. Set up 54.
3. Set up 8, 6, 5, 28, 29, 55, 24, 11, 41, 43, 40, 42, 13, 12 and 38 in order.
4. Set up 46, 44, 45, 7, 48 and 23 in order.
5. Insert 34 and set 32 between 34 and 37.
6. Mount 82 and fix with 67.
7. Be sure to hook the spring 51.

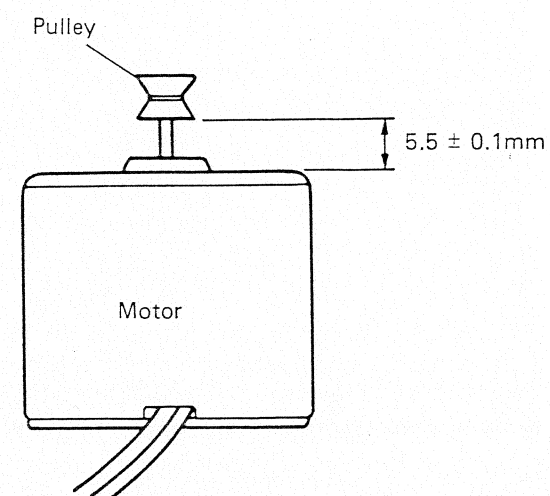


Figure 30.

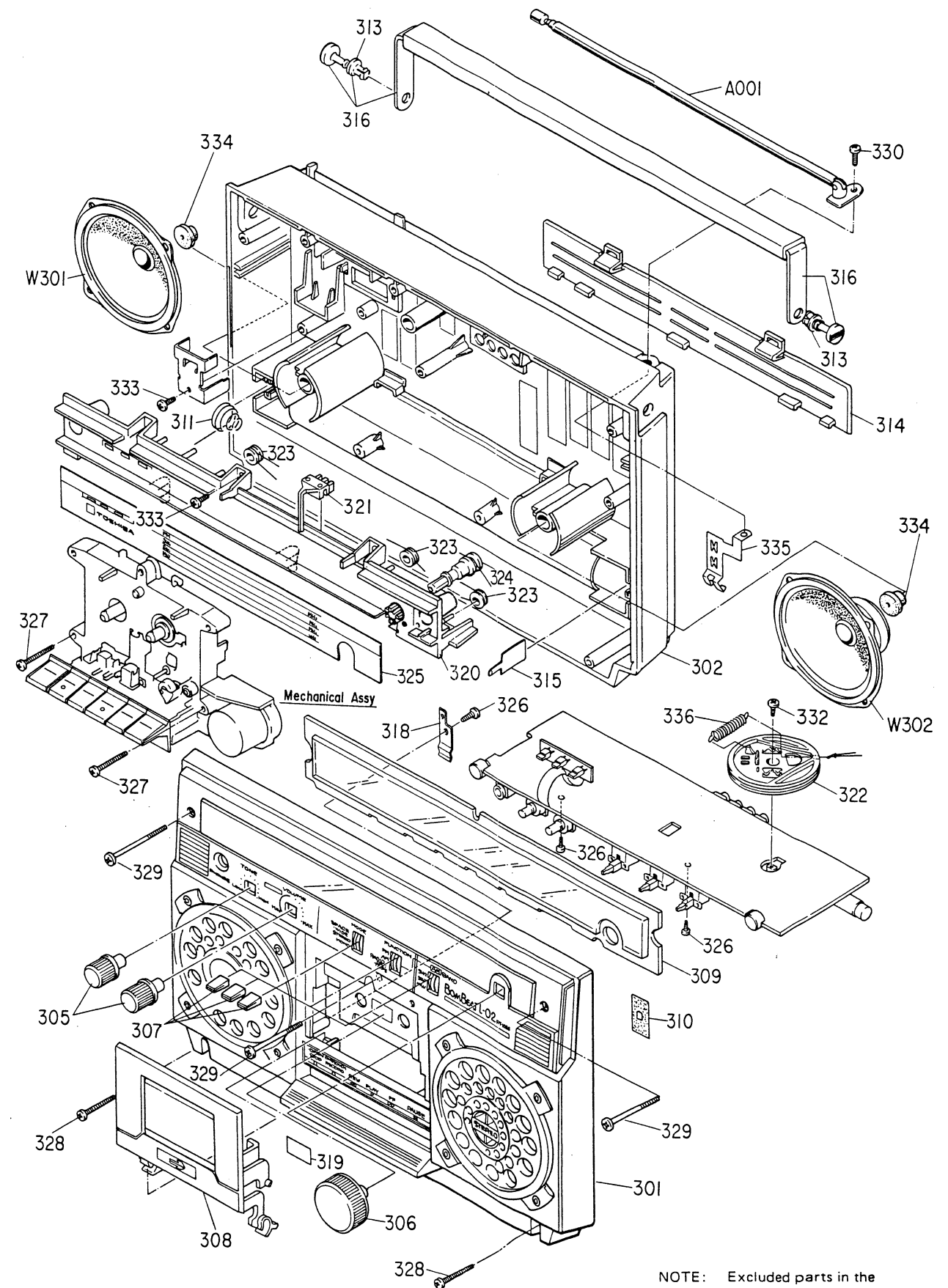
Install the motor and pulley according to the dimension shown left. Take enough care as wrong installation causes vibration noise of the belt.

## 12. MECHANISM PARTS LIST

| Symbol No.       | Part No. | Description                                   |
|------------------|----------|---|
| <b>MECHANISM</b> |          |   |
| 1                | 22217379 | Head, Record/Playback, HRPT-91                |
| 2                | 22218240 | Head, Erase, HET-58                           |
| 4                | 25777047 | Spring, Back Tension                          |
| 5                | 25782429 | Lever, Eject                                  |
| 6                | 25756247 | ASO Gear                                      |
| 7                | 25773367 | Spring, ASO Lever                             |
| 8                | 25782440 | ASO Lever                                     |
| 9                | 25782427 | Lever, Detector                               |
| 10               | 25783239 | Bushing                                       |
| 11               | 25741852 | Operation Plate, Pause                        |
| 12               | 25782430 | Lever, Pause Lock                             |
| 13               | 25741828 | Operation Plate, Record                       |
| 14               | 25782444 | Lever, Record Lock                            |
| 20               | 25725340 | Holder, Flywheel                              |
| 21               | 25754386 | Hub Plate, Supply                             |
| 22               | 25764549 | Washer  |
| 23               | 25776400 | Spring, Rewind Lever                          |
| 24               | 25773543 | Spring  |
| 25               | 25712392 | Hub Plate, Take-up                            |
| 26               | 25777055 | Spring, Back Tension                          |
| 27               | 25756179 | Gear, High-speed                              |
| 28               | 25782441 | Lever, Rewind                                 |
| 29               | 25782442 | Lever, Fast Forward                           |
| 30               | 25791353 | Gear Ass'y, High-speed                        |
| 31               | 25783238 | Mount, Take-up Idler                          |
| 32               | 25755497 | Belt, Drive                                   |
| 33               | 25764398 | Washer, $\phi 2.5 \times \phi 6 \times t 0.5$ |
| 34               | 25717486 | Flywheel Ass'y                                |
| 35               | 22707296 | Screw, $\phi 2.6 \times 1.8 \times 4.9$ mm    |
| 36               | 25761327 | Cushion, Motor                                |
| 37               | 22125767 | Motor   |
| 38               | 25732357 | Stop Plate                                    |
| 40               | 25741827 | Operation Plate, Rewind                       |
| 41               | 25741826 | Operation Plate, F.F.                         |
| 42               | 25741865 | Operation Plate, Stop                         |
| 43               | 25741844 | Operation Plate, Play                         |
| 44               | 25776331 | Spring, Lock Slider                           |
| 45               | 25776329 | Spring, Operation C                           |
| 46               | 25773369 | Spring, Operation B                           |
| 48               | 25773561 | Spring, Operation                             |
| 49               | 25741825 | Head Slider                                   |
| 50               | 25777056 | Spring, Azimuth                               |
| 51               | 25773577 | Spring, Head Slider                           |
| 52               | 25773366 | Spring, Pressure Roller                       |
| 53               | 25783237 | Head Mount                                    |
| 54               | 25717480 | Pressure Roller                               |
| 55               | 25713547 | Idler Ass'y, Take-up                          |
| 56               | 25773544 | Spring, Gear Lever                            |
| 57               | 25782428 | Lever, Erase Head                             |
| 58               | 25758089 | Pulley, Motor                                 |

| Symbol No. | Part No. | Description                                |
|------------|----------|--|
| 60         | 25837723 | Knob, Pause                                |
| 61         | 25837724 | Knob, Fast Forward                         |
| 62         | 25837725 | Knob, Play                                 |
| 63         | 25837726 | Knob, Rewind                               |
| 64         | 25837727 | Knob, Record                               |
| 65         | 25837728 | Knob, Stop                                 |
| 66         | 25766043 | Washer, Flywheel                           |
| 67         | 22707301 | Screw, BID $\phi 2.6 \times 8$ mm, Tapping |
| 68         | 22707350 | Screw, BID $\phi 2.6 \times 5$ mm          |
| 71         | 22707322 | Screw, BID $\phi 2 \times 10$ mm           |
| 79         | 25791446 | Main chassis Assy                          |

## 13. CABINET EXPLODED VIEW



NOTE: Excluded parts in the Parts List are not available as replacement parts.

## 14. PARTS LIST

**CAUTION:** The  $\triangle$  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

| Symbol No.                           | Part No. | Description                                       |
|--------------------------------------|----------|---|
| <b>CABINET PARTS</b>                 |          |   |
| 301                                  | 25881262 | Cabinet Front Ass'y                               |
| 302                                  | 25881238 | Cabinet Back Ass'y                                |
| 303                                  | 25808088 | Nameplate, Main                                   |
| 305                                  | 25837629 | Knob, Tone  |
| 306                                  | 25837650 | Knob, Tuning                                      |
| 307                                  | 25837651 | Knob, Lever Switch                                |
| 308                                  | 25838672 | Cover, Cassette                                   |
| 309                                  | 25838673 | Dial Cover  |
| 310                                  | 25858490 | Cover, Switch                                     |
| 311                                  | 25776318 | Battery Spring                                    |
| 312                                  | 25835411 | Washer, Handle                                    |
| 313                                  | 25835451 | Bush, Handle                                      |
| 314                                  | 25838671 | Cover, Battery                                    |
| 315                                  | 25864007 | Contact, Battery                                  |
| 316                                  | 25815224 | Handle Ass'y                                      |
| 318                                  | 25773558 | Spring, Cassette Up                               |
| 319                                  | 25824247 | Reflector, Cassette                               |
| 320                                  | 22718171 | Frame Ass'y, Tuner                                |
| 321                                  | 22741360 | Pointer, Cursor Type                              |
| 322                                  | 22742269 | Dial Drum   |
| 323                                  | 22742270 | Pulley  |
| 324                                  | 22749316 | Tuning Shaft                                      |
| 325                                  | 25828933 | Dial Plate  |
| 326                                  | 22707276 | Screw, BID $\phi 3 \times 6$ mm,<br>Tapping       |
| 327                                  | 22701246 | Screw, BID $\phi 3 \times 30$ mm,<br>Tapping      |
| 328                                  | 22707749 | Screw, BID $\phi 3 \times 30$ mm,<br>Tapping, BLK |
| 329                                  | 22707706 | Screw, BID $\phi 3 \times 45$ mm,<br>Tapping      |
| 330                                  | 22707382 | Screw, BID $\phi 3 \times 10$ mm,<br>Tapping      |
| 332                                  | 22707473 | Screw, BID $\phi 2.6 \times 6$ mm                 |
| 333                                  | 22707453 | Screw, BID $\phi 3 \times 16$ mm                  |
| 334                                  | 25857035 | Cushion, Speaker                                  |
| 336                                  | 25776387 | Spring, Dial Drum                                 |
| 337                                  | 25808089 | Nameplate, Main, L-01                             |
| <b>TRANSISTORS, ICS &amp; DIODES</b> |          |   |
| Q001                                 |          | I.C., TA7335P                                     |
| Q101                                 |          | I.C., TA7640P                                     |
| Q102, 402                            |          | Transistor, 2SC1815-GR                            |
| Q201                                 |          | I.C., TA7343P                                     |
| Q301                                 |          | I.C., TA7232P                                     |
| Q401                                 |          | I.C., TA7668P                                     |
| Q501, 901                            |          | Transistor, 2SC1959-Y                             |

| Symbol No.                      | Part No. | Description                          |
|---------------------------------|----------|--------------------------------------|
| D101, 102,<br>103, 501          |          | Diode, 1S1555                        |
| D401                            |          | Diode, TLR123, LED, RED              |
| D701                            |          | Diode, TLR205, LED, GRN              |
| D702, 703                       |          | Diode, TLG205, LED, RED              |
| $\triangle$ D901                |          | Diode, 1B2C1                         |
| D902                            |          | Diode, Zener, 05Z5.1                 |
| <b>COILS &amp; TRANSFORMERS</b> |          |                                      |
| L001                            | 22294432 | Coil, FM Antenna                     |
| L002                            | 22294431 | Coil, FM Oscillator                  |
| L101                            | 22265821 | IF Transformer, FM                   |
| L102                            | 22282215 | Coil, Antenna, SW2                   |
| L103                            | 22282216 | Coil, Antenna, SW1                   |
| L104                            | 22242854 | Coil, Antenna, MW                    |
| L105                            | 22285320 | Coil, Oscillator, SW2                |
| L106                            | 22285319 | Coil, Oscillator, SW1                |
| L107                            | 22245385 | Coil, Oscillator, MW                 |
| L108                            | 22264837 | IF Transformer, AM                   |
| L109                            | 22264838 | IF Transformer, AM                   |
| L110                            | 22265822 | IF Transformer, FM                   |
| L111                            | 22291103 | Coil, Choke, 1.5 $\mu$ H             |
| L501                            | 22235182 | Coil, Oscillator, Tape               |
| $\triangle$ L901                | 22223956 | Power Transformer                    |
| <b>ELECTRICAL PARTS</b>         |          |                                      |
| S1-1 ~ 8                        | 22195822 | Switch, Lever, Function AM-FM-TAPE   |
| S2-1 ~ 9                        | 22195878 | Switch, Slide, Record/Playback       |
| S3-1 ~ 5                        | 22195821 | Switch, Lever, Band MW-SW1-SW2       |
| S4-1 ~ 2                        | 22195820 | Switch, Lever, Mode WIDE-ST-MONO     |
| S901                            | 22195555 | Switch, Leaf, Power                  |
| A001                            | 22124491 | Rod Antenna                          |
| W301, 302                       | 22152360 | Speaker, SP-12S1D                    |
| Z001                            | 22153121 | Filter, FM, RF, PFWB5                |
| Z101                            | 22153058 | Filter, Ceramic, 10.7 MHz            |
| Z102                            | 22153083 | Filter, Ceramic, AM                  |
| G401, 402                       | 22154233 | Microphone Unit,                     |
| J301                            | 22163880 | Jack, $\phi 6$ , Headphone           |
| J401, 402,<br>403, 404          | 22163865 | Jack, $\phi 3.5$ , Ext. Mic./Line-in |
| $\triangle$ J901                | 22167952 | AC Socket, 3P                        |

| Symbol No.   | Part No. | Description            |
|--|----------|------------------------|
| <b>CAPACITORS</b><br><b>D = <math>\pm 0.5\text{pF}</math>, J = <math>\pm 5\%</math>, K = <math>\pm 10\%</math>, M = <math>\pm 20\%</math>, Z = <math>-20+80\%</math></b><br><b>Work voltages of capacitor are DC 50V unless otherwise noted.</b><br><b>Abbreviations: CD = Ceramic Disk, EL = Electrolytic, MY = Mylar, PP = Polypropylene, BL = Barrier Layer, PS = Polystyrene</b> |          |                        |
| C001, 002, 003, 004, 011, 012, 005, 006  | 22308219 | Variable               |
| C007, 008 009, 010   | 22309183 | Trimmer                |
| C013   | 22342223 | CD, 0.022mfd, Z        |
| C014   | 22362681 | CD, 680pF, K           |
| C015   | 22362220 | CD, 22pF, K            |
| C016   | 22360132 | CD, 15pF, J (CH)       |
| C017   | 22360146 | CD, 18pF, J (RH)       |
| C018   | 22362330 | CD, 33pF, K            |
| C019   | 22362150 | CD, 15pF, K            |
| C020   | 22342223 | CD, 0.022mfd, Z        |
| C023   | 22342223 | CD, 0.022mfd, Z        |
| C024   | 22342223 | CD, 0.022mfd, Z        |
| C027   | 22342223 | CD, 0.022mfd, Z        |
| C028   | 22485220 | EL, 22mfd, 16V         |
| C101   | 22362560 | CD, 56pF, K            |
| C102   | 22362220 | CD, 22pF, K            |
| C103   | 22362100 | CD, 10pF, K            |
| C105   | 22362220 | CD, 22pF, K            |
| C106   | 22349122 | CD, 1200pF, K          |
| C107   | 22321016 | PP, 360pF, J           |
| C108   | 22362100 | CD, 10pF, K            |
| C110   | 22342103 | CD, 0.01mfd, Z         |
| C111   | 22342103 | CD, 0.01mfd, Z         |
| C112   | 22362102 | CD, 1000pF, K          |
| C113   | 22485100 | EL, 10mfd, 16V         |
| C114   | 22342223 | CD, 0.022mfd, Z        |
| C115   | 22485220 | EL, 22mfd, 16V         |
| C116   | 22342223 | CD, 0.022mfd, Z        |
| C117 <i>16 1079</i>  | 22342223 | CD, 0.022mfd, Z M. 25V |
| C118   | 22483101 | EL, 100mfd, 10V        |
| C119   | 22488108 | EL, 0.1mfd             |
| C120   | 22488478 | EL, 0.47mfd            |
| C121   | 22342103 | CD, 0.01mfd, Z         |
| C123   | 22360615 | CD, 5pF, D (LH)        |
| C124   | 22349103 | CD, 0.01mfd, K         |
| C125   | 22342223 | CD, 0.022mfd, Z        |
| C126   | 22488339 | EL, 3.3mfd             |
| C128   | 22342473 | CD, 0.047mfd, Z        |
| C202   | 22488339 | EL, 3.3mfd             |
| C203   | 22488109 | EL, 1mfd               |
| C204   | 22372102 | MY, 1000pF             |
| C205   | 22488339 | EL, 3.3mfd             |

| Symbol No. | Part No. | Description          |
|------------|----------|----------------------|
| C206       | 22342223 | CD, 0.022mfd, Z      |
| C207       | 22342223 | CD, 0.022mfd, Z      |
| C208       | 22360333 | BL, 0.1mfd, M, 25V   |
| C209       | 22360333 | BL, 0.1mfd, M, 25V   |
| C210       | 22483221 | EL, 220mfd, 10V      |
| C301, 302  | 22360331 | BL, 0.047mfd, Z      |
| C303, 304  | 22349222 | CD, 2200pF, K        |
| C305, 306  | 22360331 | BL, 0.047mfd, M, 25V |
| C307, 308  | 22488478 | EL, 0.47mfd          |
| C309, 310  | 22349102 | CD, 1000pF, K        |
| C311, 312  | 22485220 | EL, 22mfd, 16V       |
| C313       | 22488339 | EL, 3.3mfd           |
| C314       | 22483331 | EL, 330mfd, 10V      |
| C315, 316  | 22372154 | MY, 0.15mfd, K       |
| C317, 318  | 22482471 | EL, 470mfd, 6.3V     |
| C319       | 22485220 | EL, 22mfd, 16V       |
| C321, 322  | 22485220 | EL, 22mfd, 16V       |
| C401       | 22360333 | BL, 0.1mfd, M, 25V   |
| C402       | 22360333 | BL, 0.1mfd, M, 25V   |
| C403       | 22342473 | CD, 0.047mfd, Z      |
| C404       | 22342473 | CD, 0.047mfd, Z      |
| C405       | 22483470 | EL, 47mfd, 10V       |
| C406       | 22483470 | EL, 47mfd, 10V       |
| C407       | 22349332 | CD, 3300pF, K        |
| C408       | 22349332 | CD, 3300pF, K        |
| C409       | 22349222 | CD, 2200pF, K        |
| C410       | 22349222 | CD, 2200pF, K        |
| C411       | 22483470 | EL, 47mfd, 10V       |
| C412       | 22483470 | EL, 47mfd, 10V       |
| C413       | 22488339 | EL, 3.3mfd           |
| C414       | 22488339 | EL, 3.3mfd           |
| C415       | 22360328 | BL, 0.015mfd, M, 25V |
| C416       | 22360328 | BL, 0.015mfd, M, 25V |
| C417       | 22349472 | CD, 4700pF, K        |
| C418       | 22349472 | CD, 4700pF, K        |
| C419       | 22488339 | EL, 3.3mfd           |
| C420       | 22488339 | EL, 3.3mfd           |
| C421       | 22483101 | EL, 100mfd, 10V      |
| C423       | 22362180 | CD, 18pF, K          |
| C424       | 22362180 | CD, 18pF, K          |
| C425       | 22488478 | EL, 0.47mfd          |
| C426       | 22488478 | EL, 0.47mfd          |
| C427       | 22349472 | CD, 4700pF, K        |
| C428       | 22349472 | CD, 4700pF, K        |
| C429       | 22483101 | EL, 100mfd, 10V      |
| C431       | 22362560 | CD, 56pF, K          |
| C432       | 22488339 | EL, 3.3mfd           |
| C433       | 22488339 | EL, 3.3mfd           |
| C434       | 22488339 | EL, 3.3mfd           |
| C501       | 22360329 | BL, 0.022mfd, M, 25V |
| C502       | 22362331 | CD, 330pF, K         |
| C503       | 22360329 | BL, 0.022mfd, M, 25V |
| C504       | 22372222 | MY, 2200pF, K        |

## 14. PARTS LIST

**CAUTION:** The  $\triangle$  mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

| Symbol No.                           | Part No. | Description                                       |
|--------------------------------------|----------|---|
| <b>CABINET PARTS</b>                 |          |   |
| 301                                  | 25881262 | Cabinet Front Ass'y                               |
| 302                                  | 25881238 | Cabinet Back Ass'y                                |
| 303                                  | 25808088 | Nameplate, Main                                   |
| 305                                  | 25837629 | Knob, Tone  |
| 306                                  | 25837650 | Knob, Tuning                                      |
| 307                                  | 25837651 | Knob, Lever Switch                                |
| 308                                  | 25838672 | Cover, Cassette                                   |
| 309                                  | 25838673 | Dial Cover  |
| 310                                  | 25858490 | Cover, Switch                                     |
| 311                                  | 25776318 | Battery Spring                                    |
| 312                                  | 25835411 | Washer, Handle                                    |
| 313                                  | 25835451 | Bush, Handle                                      |
| 314                                  | 25838671 | Cover, Battery                                    |
| 315                                  | 25864007 | Contact, Battery                                  |
| 316                                  | 25815224 | Handle Ass'y                                      |
| 318                                  | 25773558 | Spring, Cassette Up                               |
| 319                                  | 25824247 | Reflector, Cassette                               |
| 320                                  | 22718171 | Frame Ass'y, Tuner                                |
| 321                                  | 22741360 | Pointer, Cursor Type                              |
| 322                                  | 22742269 | Dial Drum   |
| 323                                  | 22742270 | Pulley  |
| 324                                  | 22749316 | Tuning Shaft                                      |
| 325                                  | 25828933 | Dial Plate  |
| 326                                  | 22707276 | Screw, BID $\phi 3 \times 6$ mm,<br>Tapping       |
| 327                                  | 22701246 | Screw, BID $\phi 3 \times 30$ mm,<br>Tapping      |
| 328                                  | 22707749 | Screw, BID $\phi 3 \times 30$ mm,<br>Tapping, BLK |
| 329                                  | 22707706 | Screw, BID $\phi 3 \times 45$ mm,<br>Tapping      |
| 330                                  | 22707382 | Screw, BID $\phi 3 \times 10$ mm,<br>Tapping      |
| 332                                  | 22707473 | Screw, BID $\phi 2.6 \times 6$ mm                 |
| 333                                  | 22707453 | Screw, BID $\phi 3 \times 16$ mm                  |
| 334                                  | 25857035 | Cushion, Speaker                                  |
| 336                                  | 25776387 | Spring, Dial Drum                                 |
| 337                                  | 25808089 | Nameplate, Main, L-01                             |
| <b>TRANSISTORS, ICS &amp; DIODES</b> |          |   |
| Q001                                 |          | I.C., TA7335P                                     |
| Q101                                 |          | I.C., TA7640P                                     |
| Q102, 402                            |          | Transistor, 2SC1815-GR                            |
| Q201                                 |          | I.C., TA7343P                                     |
| Q301                                 |          | I.C., TA7232P                                     |
| Q401                                 |          | I.C., TA7668P                                     |
| Q501, 901                            |          | Transistor, 2SC1959-Y                             |

| Symbol No.                      | Part No. | Description                          |
|---------------------------------|----------|--------------------------------------|
| D101, 102,<br>103, 501          |          | Diode, 1S1555                        |
| D401                            |          | Diode, TLR123, LED, RED              |
| D701                            |          | Diode, TLR205, LED, GRN              |
| D702, 703                       |          | Diode, TLG205, LED, RED              |
| $\triangle$ D901                |          | Diode, 1B2C1                         |
| D902                            |          | Diode, Zener, 05Z5.1                 |
| <b>COILS &amp; TRANSFORMERS</b> |          |                                      |
| L001                            | 22294432 | Coil, FM Antenna                     |
| L002                            | 22294431 | Coil, FM Oscillator                  |
| L101                            | 22265821 | IF Transformer, FM                   |
| L102                            | 22282215 | Coil, Antenna, SW2                   |
| L103                            | 22282216 | Coil, Antenna, SW1                   |
| L104                            | 22242854 | Coil, Antenna, MW                    |
| L105                            | 22285320 | Coil, Oscillator, SW2                |
| L106                            | 22285319 | Coil, Oscillator, SW1                |
| L107                            | 22245385 | Coil, Oscillator, MW                 |
| L108                            | 22264837 | IF Transformer, AM                   |
| L109                            | 22264838 | IF Transformer, AM                   |
| L110                            | 22265822 | IF Transformer, FM                   |
| L111                            | 22291103 | Coil, Choke, 1.5 $\mu$ H             |
| L501                            | 22235182 | Coil, Oscillator, Tape               |
| $\triangle$ L901                | 22223956 | Power Transformer                    |
| <b>ELECTRICAL PARTS</b>         |          |                                      |
| S1-1 ~ 8                        | 22195822 | Switch, Lever, Function AM-FM-TAPE   |
| S2-1 ~ 9                        | 22195878 | Switch, Slide, Record/Playback       |
| S3-1 ~ 5                        | 22195821 | Switch, Lever, Band MW-SW1-SW2       |
| S4-1 ~ 2                        | 22195820 | Switch, Lever, Mode WIDE-ST-MONO     |
| S901                            | 22195555 | Switch, Leaf, Power                  |
| A001                            | 22124491 | Rod Antenna                          |
| W301, 302                       | 22152360 | Speaker, SP-12S1D                    |
| Z001                            | 22153121 | Filter, FM, RF, PFWB5                |
| Z101                            | 22153058 | Filter, Ceramic, 10.7 MHz            |
| Z102                            | 22153083 | Filter, Ceramic, AM                  |
| G401, 402                       | 22154233 | Microphone Unit,                     |
| J301                            | 22163880 | Jack, $\phi 6$ , Headphone           |
| J401, 402,<br>403, 404          | 22163865 | Jack, $\phi 3.5$ , Ext. Mic./Line-in |
| $\triangle$ J901                | 22167952 | AC Socket, 3P                        |

| Symbol No.   | Part No. | Description            |
|--|----------|------------------------|
| <b>CAPACITORS</b><br><b>D = <math>\pm 0.5\text{pF}</math>, J = <math>\pm 5\%</math>, K = <math>\pm 10\%</math>, M = <math>\pm 20\%</math>, Z = <math>-20+80\%</math></b><br><b>Work voltages of capacitor are DC 50V unless otherwise noted.</b><br><b>Abbreviations: CD = Ceramic Disk, EL = Electrolytic, MY = Mylar, PP = Polypropylene, BL = Barrier Layer, PS = Polystyrene</b> |          |                        |
| C001, 002, 003, 004, 011, 012, 005, 006  | 22308219 | Variable               |
| C007, 008 009, 010   | 22309183 | Trimmer                |
| C013   | 22342223 | CD, 0.022mfd, Z        |
| C014   | 22362681 | CD, 680pF, K           |
| C015   | 22362220 | CD, 22pF, K            |
| C016   | 22360132 | CD, 15pF, J (CH)       |
| C017   | 22360146 | CD, 18pF, J (RH)       |
| C018   | 22362330 | CD, 33pF, K            |
| C019   | 22362150 | CD, 15pF, K            |
| C020   | 22342223 | CD, 0.022mfd, Z        |
| C023   | 22342223 | CD, 0.022mfd, Z        |
| C024   | 22342223 | CD, 0.022mfd, Z        |
| C027   | 22342223 | CD, 0.022mfd, Z        |
| C028   | 22485220 | EL, 22mfd, 16V         |
| C101   | 22362560 | CD, 56pF, K            |
| C102   | 22362220 | CD, 22pF, K            |
| C103   | 22362100 | CD, 10pF, K            |
| C105   | 22362220 | CD, 22pF, K            |
| C106   | 22349122 | CD, 1200pF, K          |
| C107   | 22321016 | PP, 360pF, J           |
| C108   | 22362100 | CD, 10pF, K            |
| C110   | 22342103 | CD, 0.01mfd, Z         |
| C111   | 22342103 | CD, 0.01mfd, Z         |
| C112   | 22362102 | CD, 1000pF, K          |
| C113   | 22485100 | EL, 10mfd, 16V         |
| C114   | 22342223 | CD, 0.022mfd, Z        |
| C115   | 22485220 | EL, 22mfd, 16V         |
| C116   | 22342223 | CD, 0.022mfd, Z        |
| C117 <i>16 1079</i>  | 22342223 | CD, 0.022mfd, Z M. 25V |
| C118   | 22483101 | EL, 100mfd, 10V        |
| C119   | 22488108 | EL, 0.1mfd             |
| C120   | 22488478 | EL, 0.47mfd            |
| C121   | 22342103 | CD, 0.01mfd, Z         |
| C123   | 22360615 | CD, 5pF, D (LH)        |
| C124   | 22349103 | CD, 0.01mfd, K         |
| C125   | 22342223 | CD, 0.022mfd, Z        |
| C126   | 22488339 | EL, 3.3mfd             |
| C128   | 22342473 | CD, 0.047mfd, Z        |
| C202   | 22488339 | EL, 3.3mfd             |
| C203   | 22488109 | EL, 1mfd               |
| C204   | 22372102 | MY, 1000pF             |
| C205   | 22488339 | EL, 3.3mfd             |

| Symbol No. | Part No. | Description          |
|------------|----------|----------------------|
| C206       | 22342223 | CD, 0.022mfd, Z      |
| C207       | 22342223 | CD, 0.022mfd, Z      |
| C208       | 22360333 | BL, 0.1mfd, M, 25V   |
| C209       | 22360333 | BL, 0.1mfd, M, 25V   |
| C210       | 22483221 | EL, 220mfd, 10V      |
| C301, 302  | 22360331 | BL, 0.047mfd, Z      |
| C303, 304  | 22349222 | CD, 2200pF, K        |
| C305, 306  | 22360331 | BL, 0.047mfd, M, 25V |
| C307, 308  | 22488478 | EL, 0.47mfd          |
| C309, 310  | 22349102 | CD, 1000pF, K        |
| C311, 312  | 22485220 | EL, 22mfd, 16V       |
| C313       | 22488339 | EL, 3.3mfd           |
| C314       | 22483331 | EL, 330mfd, 10V      |
| C315, 316  | 22372154 | MY, 0.15mfd, K       |
| C317, 318  | 22482471 | EL, 470mfd, 6.3V     |
| C319       | 22485220 | EL, 22mfd, 16V       |
| C321, 322  | 22485220 | EL, 22mfd, 16V       |
| C401       | 22360333 | BL, 0.1mfd, M, 25V   |
| C402       | 22360333 | BL, 0.1mfd, M, 25V   |
| C403       | 22342473 | CD, 0.047mfd, Z      |
| C404       | 22342473 | CD, 0.047mfd, Z      |
| C405       | 22483470 | EL, 47mfd, 10V       |
| C406       | 22483470 | EL, 47mfd, 10V       |
| C407       | 22349332 | CD, 3300pF, K        |
| C408       | 22349332 | CD, 3300pF, K        |
| C409       | 22349222 | CD, 2200pF, K        |
| C410       | 22349222 | CD, 2200pF, K        |
| C411       | 22483470 | EL, 47mfd, 10V       |
| C412       | 22483470 | EL, 47mfd, 10V       |
| C413       | 22488339 | EL, 3.3mfd           |
| C414       | 22488339 | EL, 3.3mfd           |
| C415       | 22360328 | BL, 0.015mfd, M, 25V |
| C416       | 22360328 | BL, 0.015mfd, M, 25V |
| C417       | 22349472 | CD, 4700pF, K        |
| C418       | 22349472 | CD, 4700pF, K        |
| C419       | 22488339 | EL, 3.3mfd           |
| C420       | 22488339 | EL, 3.3mfd           |
| C421       | 22483101 | EL, 100mfd, 10V      |
| C423       | 22362180 | CD, 18pF, K          |
| C424       | 22362180 | CD, 18pF, K          |
| C425       | 22488478 | EL, 0.47mfd          |
| C426       | 22488478 | EL, 0.47mfd          |
| C427       | 22349472 | CD, 4700pF, K        |
| C428       | 22349472 | CD, 4700pF, K        |
| C429       | 22483101 | EL, 100mfd, 10V      |
| C431       | 22362560 | CD, 56pF, K          |
| C432       | 22488339 | EL, 3.3mfd           |
| C433       | 22488339 | EL, 3.3mfd           |
| C434       | 22488339 | EL, 3.3mfd           |
| C501       | 22360329 | BL, 0.022mfd, M, 25V |
| C502       | 22362331 | CD, 330pF, K         |
| C503       | 22360329 | BL, 0.022mfd, M, 25V |
| C504       | 22372222 | MY, 2200pF, K        |

| Symbol No.   | Part No.            | Description                            |
|--|---------------------|--|
| C505   | 22483221            | EL, 220mfd, 10V                        |
| <del>C901</del>  | <del>22485222</del> | <del>EL, 2200mfd, 16V</del>            |
| C902, 903  | 22342223            | CD, 0.022mfd, Z                        |
| C904, 905  | 22342223            | CD, 0.022mfd, Z                        |
| C906   | 22482471            | EL, 470mfd, 6.3V                       |
| C907   | 22483101            | EL, 100 $\mu$ F, 10V                   |
| <b>RESISTORS</b>   |                     |  |
| 1. Resistors are Carbon film $\frac{1}{4}W$ , $\pm 5\%$ , unless otherwise noted.<br>2. PRC is short for the printed resistor circuit. If replacement of the resistor in PRC is required. Please use the substitutional fixed Carbon film resistor of $\frac{1}{4}W$ , $\pm 5\%$ according to the following list.<br>K = 1000, M = 1000000 |                     |  |
| R101   | 22545681            | 680 ohm (PRC)                          |
| R102   | 22545393            | 39K ohm                                |
| R103   | 22545153            | 15K ohm                                |
| R104   | 22545223            | 22K ohm (PRC)                          |
| R105   | 22545182            | 1.8K ohm                               |
| R106   | 22545470            | 47 ohm                                 |
| R107   | 22545683            | 68K ohm                                |
| R108   | 22545472            | 4.7K ohm                               |
| R109   | 22545470            | 47 ohm                                 |
| R110   | 22545104            | 100K ohm (PRC)                         |
| R111   | 22545104            | 100K ohm (PRC)                         |
| R112   | 22545681            | 680 ohm (PRC)                          |
| R113   | 22545224            | 220K ohm (PRC)                         |
| R114   | 22545331            | 330 ohm (PRC)                          |
| R115   | 22545220            | 22 ohm                                 |
| R201   | 22545102            | 1K ohm (PRC)                           |
| R202   | 22658599            | Semi-fixed Variable, 10K-B<br>Free Run |
| R203   | 22545562            | 5.6K ohm (PRC)                         |
| R204   | 22545681            | 680 ohm (PRC)                          |
| R205   | 22545222            | 2.2K ohm                               |
| R206   | 22545224            | 220K ohm (PRC)                         |
| R207   | 22545332            | 3.3K ohm                               |
| R208   | 22545332            | 3.3K ohm                               |
| R209   | 22545822            | 8.2K ohm                               |
| R210   | 22545822            | 8.2K ohm                               |
| R211   | 22545681            | 680 ohm (PRC)                          |
| R301, 302  | 22545183            | 18K ohm (PRC)                          |
| R303, 304  | 22651564            | Variable, 50K-A, Tone                  |
| R305, 306  | 22545472            | 4.7K ohm                               |
| <del>R307, 308</del>   | <del>22651563</del> | <del>Variable, 50K-B, Volume</del>     |
| R309, 310  | 22545101            | 100 ohm                                |
| R311, 312  | 22545101            | 100 ohm                                |
| R313   | 22545339            | 3.3 ohm                                |
| R401, 402  | 22545682            | 6.8K ohm                               |
| R403, 404  | 22545472            | 4.7K ohm (PRC)                         |
| R405   | 22545681            | 680 ohm (PRC)                          |
| R406   | 22552225            | 2.2M ohm                               |

| Symbol No.         | Part No.            | Description                  |
|--------------------|---------------------|------------------------------|
| R407, 408          | 22545121            | 120 ohm (PRC)                |
| R409, 410          | 22545104            | 100K ohm                     |
| R411, 412          | 22545103            | 10K ohm (PRC)                |
| R413, 414          | 22545101            | 100 ohm (PRC)                |
| R415, 416          | 22545273            | 27K ohm                      |
| R417, 418          | 22545822            | 8.2K ohm                     |
| R419, 420          | 22545474            | 470K ohm (PRC)               |
| R421, 422          | 22545183            | 18K ohm (PRC)                |
| R423               | 22545821            | 820 ohm (PRC)                |
| R425, 426          | 22545222            | 2.2K ohm                     |
| R428               | 22545222            | 2.2K ohm (PRC)               |
| R501               | 22545182            | 1.8K ohm                     |
| R502               | 22545183            | 18K ohm                      |
| R503, 504          | 22545330            | 33 ohm                       |
| R901               | 22545221            | 220 ohm                      |
| <del>R902</del>    | <del>22545569</del> | <del>5.6 ohm</del>           |
| <b>ACCESSORIES</b> |                     |                              |
| AC01               | 22903193            | Owner's Manual               |
| AC02               | 22906282            | Pop Card                     |
| AC03               | 22105357            | Tape, Demonstration, C07     |
| <del>AC04</del>    | <del>22176615</del> | <del>Power Supply Cord</del> |